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मानक

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IS 10598 (1997): Textile machinery - Guide rollers for dyeing and finishing machinery [TXD 21: Dyeing, Finishing and Allied Machinery and Accessories]



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Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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भारतीय मानक

वस्त्रादि मशीनरी — रंगाई तथा परिसज्जा मशीनरी के लिए
नियामक रोलर — विशिष्ट

(पहला पुनरीक्षण)

Indian Standard

**TEXTILE MACHINERY — GUIDE ROLLERS
FOR DYEING AND FINISHING
MACHINERY — SPECIFICATION**

(First Revision)

ICS 59.120.50

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**BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002**

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Dyeing, Finishing and Allied Machinery and Accessories Sectional Committee had been approved by the Textile Division Council.

Guide rollers are mainly used in textile dyeing and finishing machinery to expand the fabric in rope form to that in open width for further processing.

This standard has been revised with a view to align it with International Standard ISO 5249 : 1988 'Textile machinery and accessories — Guide rollers for dyeing and finishing machinery — Main dimensions'.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

TEXTILE MACHINERY — GUIDE ROLLERS FOR DYEING AND FINISHING MACHINERY — SPECIFICATION

(First Revision)

1 SCOPE

This standard prescribes the requirements of guide rollers used with dyeing and finishing machinery.

2 REFERENCES

The following Indian Standards are necessary adjuncts to this standard:

IS No.	Title
2102 (Part 1) : 1993 / ISO 2768/1 : 1989	General tolerances : Part 1 Tolerances for linear and angular dimensions without individual tolerance indications (<i>third revision</i>)
4905 : 1968	Methods for random sampling
IS/ISO 1505 : 1993	Textile machinery — Width relating to dyeing and finishing machines — Definitions and range of nominal width (super-seeding IS 7952 : 1976)

3 TYPES OF ROLLER

The guide rollers are generally of the following two types:

Type A — Revolving spindle; solid or tube roller (see Fig. 1), and

Type B — Fixed spindle; tube roller (see Fig. 2).

4 MATERIAL

4.1 Solid Roller

Solid roller shall be manufactured from the material as agreed to between the buyer and the manufacturer.

4.2 Tube Roller

The tube roller shall be fabricated from black steel tubes or stainless steel tubes as agreed to between the buyer and the manufacturer.

4.3 Spindle

The spindle shall be made of mild steel or stainless steel as specified by the buyer.

5 DIMENSIONS

5.1 External Diameter of Roller

External diameter of the roller (d_1) shall be as agreed to between the buyer and the manufacturer. Generally rollers of the following diameters are used:

60, 80, 85, 100, 110, 120, 135, 160, 165, 200 and 215 mm.

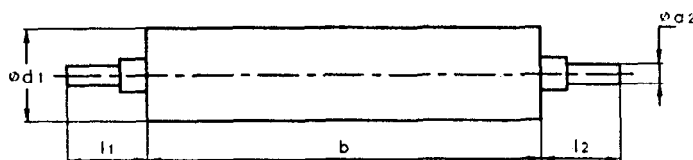


FIG. 1 TYPE A REVOLVING SPINDLE

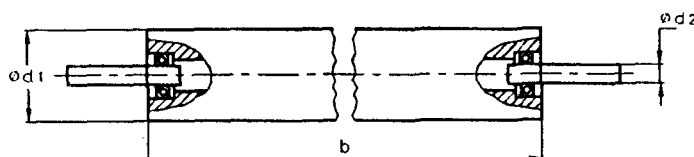


FIG. 2 TYPE B FIXED SPINDLE

5.2 Diameter of Spindle

The value for spindle diameter (*d*₂) shall be chosen with regard to the forces to be applied to the roller, and shall be in a range of values which are multiples of 5, the minimum value being 15 mm.

$d_2 = 15 - 20 - 25 - 30 - 35 - \dots \text{ mm}$

5.3 The length of spindle (*l*₁ or *l*₂) shall be as specified by the buyer.

5.4 Nominal Width

The nominal width (*b*) of roller shall be as specified by the buyer subject to a tolerance of +3 mm (see IS/ISO 1505).

5.5 The overall width of the roller (*b* + *l*₁ + *l*₂) shall be subject to coarse class deviations specified in IS 2102 (Part 1)/ISO 2768/1.

6 REQUIREMENTS

The data as given in Table 1 are standard data; the predominant decisive criterion shall be the perfect passage of fabric.

6.1 Admissible Bending

Admissible bending in terms of millimetres per metre roller width shall be as agreed to between the buyer and the manufacturer depending upon its application.

NOTE — Generally four quality grades are fixed for designation of bending, namely 2, 1, 0.5 and 0.25 corresponding to

admissible bending in millimetres per metre nominal width of the roller on the basis of an equally distributed line load of 250 N/m. For the guidance of manufacturers and users, limiting values of nominal roller widths and the standardized diameters of rollers for these quality grades taking into consideration commonly used wall thickness of 2 mm, 4 mm and 6 mm are given in Table 1.

6.2 Admissible Run-Out

The admissible run-out of the roller shall not exceed 0.5 mm per metre roller width.

6.3 Admissible Residual Imbalance

The admissible residual imbalance of the rollers shall not exceed balance quality grade G 40.

NOTE — The value of the permissible residual imbalance '*U*_{per}' is related to the roter mass '*m*' in terms of permissible residual specific imbalance value '*e*_{per}' as given by the following formula:

$$e_{\text{per}} = \frac{U_{\text{per}}}{m}$$

In general, for rotors of same type the permissible residual specific imbalance value *e*_{per} varies inversely as speed of rotor for a given balance quality grade; this relationship is given by the following formula:

$$e_{\text{per}} X \omega = \text{constant}$$

where
ω is angular velocity of the rotor at maximum service speed and is = 2 π*n*/60 ≈ *n*/10, if *n* is measured in revolutions per minute and *ω* in radians per second. The balance quality grades are based on this relationship.

In balance quality grade G40, product of the relationship (*e*_{per}*Xω*) = 40 mm/s.

Table 1 Limiting Values for Nominal Roller Widths
(Clauses 6 and 6.1)

All dimensions in millimetres.

Quality Grade	Roller Wall Thickness <i>s</i>	Roller Diameter <i>d</i> ₁ ¹⁾										
		60	80	85	100	110	120	135	160	165	200	215
		Roller Width, <i>b</i>										
2	2	2 600	3 400	3 600	4 000	4 400	4 800	5 200	6 400	6 800	7 600	8 800
	4	3 000	4 000	4 000	4 800	5 200	6 000	6 400	7 600	8 000	8 800	10 000
	6	3 200	4 400	4 400	5 200	5 600	6 400	6 800	8 000	8 400	9 600	10 400
1	2	2 000	2 700	2 900	3 400	3 400	4 000	4 000	5 200	5 200	6 000	6 800
	4	2 400	3 200	3 400	4 000	4 000	4 400	4 800	6 000	6 000	7 200	8 000
	6	2 600	3 400	3 600	4 000	4 400	4 800	5 200	6 400	6 800	7 600	8 400
0.5	2	1 600	2 100	2 300	2 700	2 800	3 200	3 400	4 000	4 000	4 800	5 200
	4	1 900	2 500	2 700	3 100	3 300	3 600	4 000	4 800	4 800	5 600	6 000
	6	2 000	2 700	2 900	3 400	3 600	4 000	4 000	5 200	5 200	6 000	6 400
0.25	2	1 300	1 700	1 800	2 100	2 200	2 500	2 700	3 300	3 400	3 800	4 400
	4	1 500	2 000	2 100	2 500	2 600	3 000	3 200	3 800	4 000	4 400	4 800
	6	1 600	2 200	2 300	2 700	2 800	3 200	3 400	4 000	4 000	4 800	5 200

¹⁾ These diameters can be achieved by machining the nearest possible size of the tube, wherever required.

7 DESIGNATION

A guide roller shall be designated by the following information in the order given:

- a) guide roller;
- b) reference to this Indian Standard;
- c) type;
- d) external diameter (d_1);
- e) spindle diameter (d_2);
- f) nominal width (b); and
- g) quality grade.

This can be completed by any useful complimentary information.

Example:

A guide roller with a fixed spindle (*Type B*), with external diameter (d_1) = 100 mm, spindle diameter (d_2) = 30 mm, nominal width (b) = 1 800 mm and quality grade 0.5 shall be designated as follows:

Guide roller IS 10598 – B × 100 × 30 × 1 800 × 0.5

8 MARKING

8.1 Each roller shall be marked with the following informations:

- a) Designation of the roller;
- b) Indication of the source of manufacture; and
- c) Month and year of manufacture.

8.1.1 BIS Certification Marking

The guide rollers may also be marked with the Standard Mark.

8.1.2 The use of the Standard Mark is governed by the provisions of *Bureau of Indian Standards Act*,

1986 and the Rules and Regulations made there-under. The details of conditions under which the licence for use of Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

9 SAMPLING AND CRITERIA FOR CONFORMITY

9.1 Lot

All the rollers of same designation delivered to a buyer against one despatch note shall constitute a lot.

9.2 Unless otherwise agreed to between the buyer and the seller, the number of rollers selected for inspection shall be as given in Table 2.

9.2.1 To ensure randomness of selection, the methods given in IS 4905 shall be followed.

9.3 The rollers selected above shall be inspected for dimensions, bending, run-out and residual imbalance. The lot shall be considered conforming to the requirements of this standard if the number of rollers found defective, is less than or equal to the corresponding acceptance number given in col 3 of Table 2.

Table 2 Sampling and Criteria for Conformity
(Clause 9.2 and 9.3)

Lot Size	Sample Size	Acceptance No.
(1)	(2)	(3)
Up to 100	13	0
101 to 150	20	0
151 to 300	32	1
301 to 500	50	1
501 and above	80	2

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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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